L Number	Hits	Search Text	DB	Time stamp
1	1805	(sub-board$1) or subboard$1 or (daughter adj board$1)	USPAT; US-PGPUB	2002/11/04 11:02
4	470	(housing$1 or enclosure$1) same ((sub-board$1) or subboard$1 or (daughter adj board$1))	USPAT; US-PGPUB	2002/11/04 10:50
7	395	connector$1 same ((housing$1 or enclosure$1) same ((sub-board$1) or subboard$1 or (daughter adj board$1)))	USPAT; US-PGPUB	2002/11/04 10:50
10	144	(sub-board$1) or subboard$1	USPAT; US-PGPUB	2002/11/04 10:50
13	17	((sub-board$1) or subboard$1) same (connector$1 same ((housing$1 or enclosure$1) same ((sub-board$1) or subboard$1 or (daughter adj board$1))))	USPAT; US-PGPUB	2002/11/04 10:46
19	0	(sub-card$1 or subcard$1) same (connector$1 same ((housing$1 or enclosure$1) same ((sub-board$1) or subboard$1 or (daughter adj board$1))))	USPAT; US-PGPUB	2002/11/04 10:46
22	1	(housing$1 or enclosure$1) same (sub-card$1 or subcard$1)	USPAT; US-PGPUB	2002/11/04 10:47
25	392	(sub-board$1) or subboard$1 or sub-card$1 or subcard$1	EPO; JPO; DERWENT; IBM_TDB	2002/11/04 10:50
30	19	(housing$1 or enclosure$1) same ((sub-board$1) or subboard$1 or sub-card$1 or subcard$1)	EPO; JPO; DERWENT; IBM_TDB	2002/11/04 10:50
35	7	connector$1 same ((housing$1 or enclosure$1) same ((sub-board$1) or subboard$1 or sub-card$1 or subcard$1))	EPO; JPO; DERWENT; IBM_TDB	2002/11/04 10:51
16	13	sub-card$1 or subcard$1	USPAT; US-PGPUB	2002/11/04 10:56
40	1		USPAT	2002/11/04 10:57
41	1		USPAT	2002/11/04 10:57
42	1		USPAT	2002/11/04 10:57
43	1		USPAT	2002/11/04 10:57
44	1		USPAT	2002/11/04 10:58
45	1		USPAT	2002/11/04 10:58
46	1		USPAT	2002/11/04 10:59
47	1		USPAT	2002/11/04 10:59
48	1		USPAT	2002/11/04 10:59
49	1		USPAT	2002/11/04 11:01
50	1		USPAT	2002/11/04 11:01
51	98	mini$6 adj pci	USPAT; US-PGPUB	2002/11/04 11:03
52	97	mini$5 adj pci	USPAT; US-PGPUB	2002/11/04 11:05
53	62	(mini or miniature$1 or miniaturization or small) adj pci	USPAT; US-PGPUB	2002/11/04 11:08
56	0	((mini or miniature$1 or miniaturization or small) adj pci) and ((sub-board$1) or subboard$1 or (daughter adj board$1))	USPAT; US-PGPUB	2002/11/04 11:07
59	0	((mini or miniature$1 or miniaturization or small) adj pci) and (((sub-board$1) or subboard$1) same (connector$1 same ((housing$1 or enclosure$1) same ((sub-board$1) or subboard$1 or (daughter adj board$1)))))	USPAT; US-PGPUB	2002/11/04 11:08

09/353,938

US-PAT-NO: 6134612
DOCUMENT-IDENTIFIER: US 6134612 A

TITLE: External modular bay for housing I/O devices

DATE-ISSUED: October 17, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bailey; Larry D.	Stevensville	MI	N/A	N/A
Brahman; Rodman S.	St. Joseph	MI	N/A	N/A
Ojeda; Peter A.	Mundelein	IL	N/A	N/A
Hallowell; William C.	Spring	TX	N/A	N/A
Jeffery; Larry L.	St. Joseph	MI	N/A	N/A
Sengupta; Upal	Oregon	WI	N/A	N/A
Stobert; Norman D.	Spring	TX	N/A	N/A
Turnbull; Robert R.	Buchanan	MI	N/A	N/A
Uithoven; Russell S.	Columbus	IN	N/A	N/A
Wagner; John P.	Round Rock	TX	N/A	N/A
Wang; Bruce	Livonia	MI	N/A	N/A

US-CL-CURRENT: 710/62; 710/2

ABSTRACT:

An external flexible bay system includes an external flexible bay, a modular battery pack and a modular disk drive. The external flexible bay is adapted to receive either the modular battery pack or the modular disk drive to facilitate use of such devices with a portable PC. The external flexible bay includes a parallel port which enables an external I/O device, such as a printer, to be connected thereto. The external flexible bay contains circuitry to automatically sense whether a printer is connected and to determine whether a modular battery pack or modular disk drive has been inserted therein. In order to ensure proper configuration, the external flexible bay includes a mode switch for selecting between a floppy mode and a printer mode.

22 Claims, 198 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 144

---------- KWIC ---------

Detailed Description Text - DETX:

As mentioned above, the modular PC 102 also enables the LCD display 2902 to be removed. In particular, as described above, the LCD 2902 includes a **connector** 2920 (FIG. 103) that is adapted to mate with a corresponding **connector** 3150 (FIG. 111) on the rear portion of the PC 102 as described above. Such a configuration enables the removable LCD 2902 to be removed from the PC 102 and utilized with the portable presentation system 2900 as discussed above. As shown in FIG. 116, the **connector** 3150 may be carried by a **sub-board** 3152, which is connected to the motherboard 3108 by way of one or more **connectors** 3154. The **connectors** 3154 are adapted to mate with corresponding **connectors** 3156 on the motherboard 3108. The **sub-board** 3152 may be used for various other options, such as one or more PCMCIA interfaces 3154 and 3156. The **sub-board**

3152 may also be used to provide various other options, such as enhanced audio options. In particular, the **sub-board** 3152 may be provided with one or more **connectors** 3156 and 3158 for connection to an audio board 3160. The audio board 3160 may be used to provide various options for the PC 102. The audio board 3160 is provided with corresponding **connectors** 3160 and 3162, which are adapted to mate with the corresponding **connectors** 3156 and 3158 on the **sub-board** 3152. Although the **sub-board** 3156 and the audio board 3160 are not accessible from the exterior of the **housing,** such a configuration provides for modular configuration for various options and for maintenance replacements.

US-PAT-NO: 6128185
DOCUMENT-IDENTIFIER: US 6128185 A

TITLE: Peripheral card locking device

DATE-ISSUED: October 3, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Fuhs; Eric D.	Stevensville	MI	N/A	N/A
Ojeda; Peter A.	Mundelein	IL	N/A	N/A
Zappacosta; Elisa E.	Issaquah	WA	N/A	N/A

US-CL-CURRENT: 361/683; 70/58

ABSTRACT:

A locking system for a computer or computer accessory housing not only secures the housing but also secures any PCMCIA cards installed in PCMCIA slots in the housing. In particular, the computer or accessory housing is configured with two side-by-side PCMCIA slots. One or more keyhole slots are disposed between the two PCMCIA for receiving a cylindrical lock assembly, such as a Kensington lock assembly. The spacing between the side-by-side PCMCIA slots is selected such that the cylindrical lock assembly is secured to the keyholes, the lock assembly partially blocks the PCMCIA slot openings and thus prevents removal of any PCMCIA cards from the computer or accessory housing. In order to provide additional security, one keyhole may be formed to depend from an interior metal chassis while a corresponding keyhole is formed from the cover which prevents removal of the cards as well as removal of the housing cover. The configuration of the lock assembly enables not only the computer or computer housing to be secured but any PCMCIA cards installed within the slots to be secured as well rather quickly and easily without the need to remove the PCMCIA cards.

8 Claims, 198 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 144

---------- KWIC ---------

Detailed Description Text - DETX:

As mentioned above, the modular PC 102 also enables the LCD display 2902 to be removed. In particular, as described above, the LCD 2902 includes a **connector** 2920 (FIG. 103) that is adapted to mate with a corresponding **connector** 3150 (FIG. 111) on the rear portion of the PC 102 as described above. Such a configuration enables the removable LCD 2902 to be removed from the PC 102 and utilized with the portable presentation system 2900 as discussed above. As shown in FIG. 116, the **connector** 3150 may be carried by a **sub-board** 3152, which is connected to the motherboard 3108 by way of one or more **connectors** 3154. The **connectors** 3154 are adapted to mate with corresponding **connectors** 3156 on the motherboard 3108. The **sub-board** 3152 may be used for various other options, such as one or more PCMCIA interfaces 3154 and 3156. The **sub-board** 3152 may also be used to provide various other options, such as enhanced audio options. In particular, the **sub-board** 3152 may be provided with one or more

connectors 3156 and 3158 for connection to an audio board 3160. The audio board 3160 may be used to provide various options for the PC 102. The audio board 3160 is provided with corresponding **connectors** 3160 and 3162, which are adapted to mate with the corresponding **connectors** 3156 and 3158 on the **sub-board** 3152. Although the **sub-board** 3156 and the audio board 3160 are not accessible from the exterior of the **housing,** such a configuration provides for modular configuration for various options and for maintenance replacements.

US-PAT-NO: 6108199
DOCUMENT-IDENTIFIER: US 6108199 A

TITLE: Modular portable personal computer having bays to receive interchangeable modules

DATE-ISSUED: August 22, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bonardi; Timothy A.	Buchanan	MI	N/A	N/A
Fuhs; Eric D.	Stevensville	MI	N/A	N/A
Ojeda; Peter A.	Mundelein	IL	N/A	N/A
Griffin; Wayne L.	St. Joseph	MI	N/A	N/A
Hallowell; William C.	Spring	TX	N/A	N/A
Wagner; John P.	Round Rock	TX	N/A	N/A
Wang; Bruce	Livonia	MI	N/A	N/A
Zappacosta; Elisa E.	Issaquah	WA	N/A	N/A

US-CL-CURRENT: 361/686; 361/727

ABSTRACT:

A modular portable personal computer includes one or more flexible bays accessible from the front surface of the computer. One or more of the flexible bays may be configured as a dual functional bay to enable the bay to interchangeably receive different modular devices, such as a modular floppy disk drive or a modular battery pack. With such a configuration, the modular floppy disk drive can be removed for portable operation and an additional battery pack installed to provide increased electrical power to the portable personal computer during portable operation. The portable personal computer is also provided with a plurality of cavities formed in a bottom surface. These cavities allow for various upgrades to be made without opening the computer housing. For example, a modular hard disk drive cavity is provided on the bottom side of the personal computer. The modular hard disk drive cavity is adapted to receive a modular hard disk drive which can be relatively easily removed and installed without opening the computer housing. In addition, a cavity may be provided which is closed by an access cover which includes one or more standard in-line memory module (SIMM) sockets to enable additional SIMMS to be added without opening the computer housing. The CPU in the modular portable personal computer can also be rather easily and quickly replaced. In particular, a cavity is formed in the bottom of the portable personal computer and carries an electrical connector that is electrically connected to the mother board. A CPU mounted on a printed circuit board (PCB) is adapted to be received in the cavity. A mating connector is provided on the PCB to enable the CPU to be connected to the motherboard. An access panel provides access to the cavity to enable the CPU to be

replaced without the need to open the computer housing.

5 Claims, 198 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 144

---------- KWIC ---------

Detailed Description Text - DETX:

As mentioned above, the modular PC 102 also enables the LCD display 2902 to be removed. In particular, as described above, the LCD 2902 includes a **connector** 2920 (FIG. 103) that is adapted to mate with a corresponding **connector** 3150 (FIG. 111) on the rear portion of the PC 102 as described above. Such a configuration enables the removable LCD 2902 to be removed from the PC 102 and utilized with the portable presentation system 2900 as discussed above. As shown in FIG. 116, the **connector** 3150 may be carried by a **sub-board** 3152, which is connected to the motherboard 3108 by way of one or more **connectors** 3154. The **connectors** 3154 are adapted to mate with corresponding **connectors** 3156 on the motherboard 3108. The **sub-board** 3152 may be used for various other options, such as one or more PCMCIA interfaces 3154 and 3156. The **sub-board** 3152 may also be used to provide various other options, such as enhanced audio options. In particular, the **sub-board** 3152 may be provided with one or more **connectors** 3156 and 3158 for connection to an audio board 3160. The audio board 3160 may be used to provide various options for the PC 102. The audio board 3160 is provided with corresponding **connectors** 3160 and 3162, which are adapted to mate with the corresponding **connectors** 3156 and 3158 on the **sub-board** 3152. Although the **sub-board** 3156 and the audio board 3160 are not accessible from the exterior of the **housing,** such a configuration provides for modular configuration for various options and for maintenance replacements.

US-PAT-NO: 5821614
DOCUMENT-IDENTIFIER: US 5821614 A

TITLE: Card type semiconductor device

DATE-ISSUED: October 13, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hashimoto; Nobuaki	Suwa	N/A	N/A	JP
Nakamura; Norio	Suwa	N/A	N/A	JP
Suemori; Hiroyuki	Suwa	N/A	N/A	JP
Sugai; Hiroshi	Suwa	N/A	N/A	JP
Imaoka; Norio	Suwa	N/A	N/A	JP
Noake; Kazuyoshi	Suwa	N/A	N/A	JP

US-CL-CURRENT: 257/679; 235/492 ; 257/712 ; 257/713 ; 361/686

ABSTRACT:

A card type semiconductor device includes a main circuit board and a first sub-circuit-board equipped with a main memory. The main circuit board is connected to the first sub-circuit-board through an FPC. A first TCP equipped with the CPU and a second TCP equipped with the I/O sub-system chip are mounted on the top and bottom surfaces of the main circuit board. The first and second TCPs are mounted to directly oppose each other. The card type semiconductor device is used as a card type computer. The main circuit board and the sub-circuit-board face each other by bending the FPC and enclosing the main circuit board and the sub-circuit-board in a card-shaped thin housing. The card type semiconductor device achieves a high density packaging in a small form factor. The card type semiconductor device supports high speed operations and provides a structure for adaptation to new applications quickly and inexpensively by allowing easy replacement of the sub-circuit-board with other sub-circuit boards that perform a wide range of functions.

38 Claims, 30 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 17

---------- KWIC ---------

Brief Summary Text - BSTX:

Mechanical loads imposed upon the flexible printed circuit and the **connector** is reduced by integrally fixing the main board and the **sub-board** to face each other. Thus, the durability against an external forces due to vibration and shock is improved. In addition, the card type semiconductor device is reduced in size and thickness. Furthermore, a side surface portion of the card-shaped **housing** for enclosing the device encloses the card type semiconductor device by a metal plate. Further, fixing the main board and the **sub-board** to face each other further reduces the thickness of the card type semiconductor device.

US-PAT-NO: 5803761
DOCUMENT-IDENTIFIER: US 5803761 A

TITLE: Edge connector

DATE-ISSUED: September 8, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mochizuki; Shoichi	Tokyo	N/A	N/A	JP

US-CL-CURRENT: 439/326

ABSTRACT:

A latch member (50) having an engagement section (54) and an abutment section (55) at its rear end portion is formed by a metal material and is secured to a housing (2) at its front end portion so as to freely swing between an engagement position for engaging and holding a memory module and a release position for releasing the memory module from being engaged and held. When a release lever (25), which is integrally formed with the housing (2) and engages the latch member (50), is opened outward so as to remove the memory module, the abutment section (55) abuts to a stopper (27) so that the engagement section (54) is positioned at the release position.

6 Claims, 12 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 6

---------- KWIC ---------

Brief Summary Text - BSTX:

In general, an edge **connector** accommodates an end portion of a **sub-board,** which is known as memory module or the like, and is disposed on a main board in order to electrically connect the **sub-board** to the main board. The edge **connector** is constituted such that a plurality of contacts to be soldered onto the main board are arranged in a **housing** made of a resin material (insulating material) such as plastic. When the **sub-board** is inserted into the edge **connector,** these contacts and leads (conductive pads) printed on the **sub-board** come into contact with each other, whereby the **sub-board** and the main board are electrically connected to each other by way of the edge **connector** soldered onto the main board.

Brief Summary Text - BSTX:

In order to facilitate replacement of memory modules or the like to be implemented and to reduce the space occupied after the attachment, known is an edge **connector** of a type in which a **sub-board** inserted from obliquely thereabove is secured and held in parallel with the main board. In general, such an edge **connector** has arms at both ends of the **housing** body. When the **sub-board** is attached to the edge **connector,** between a plurality of contacts aligned in upper and lower rows within an accommodating space formed in the **housing** body, one end side of the **sub-board** is inserted (at which the **sub-board**

is held at a position where the **sub-board** is raised obliquely upward with respect to the edge **connector,** referred to as "raised position" hereinafter) and then is pushed down to a position in parallel with the main board (referred to as "implementation position" hereinafter) so as to be mounted on and held by the arms.

Brief Summary Text - BSTX:

Since it is necessary for the edge **connector** to occupy a space as little as possible when disposed on the main board, the right and left arms thereof are formed thin. Accordingly, in the latch (lock means), the engagement section is made of a metal so as to yield a durability and strength sufficient for securing and holding the **sub-board,** which is repeatedly inserted therein and detached therefrom, whereas the release lever is integrally formed with the **housing** body by a resin such that it can elastically open outward in the right or left direction.

US-PAT-NO: 5737582
DOCUMENT-IDENTIFIER: US 5737582 A

TITLE: IC card and IC card system

DATE-ISSUED: April 7, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Fukuzumi; Tomoya	Itami	N/A	N/A	JP

US-CL-CURRENT: 710/301; 708/131 ; 708/140

ABSTRACT:

An IC card and an IC card system that enable a variety of functions to be added to the IC card. A variety of functions are provided for individual key cards (sub-cards), and the individual key card is detachable from the main body of an IC card so that the addition of and change are easily performed by insertion and change of the individual key card.

14 Claims, 19 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 10

---------- KWIC ---------

Claims Text - CLTX:

a **housing** including an opening for receiving a **sub-card** inserted inside said **housing** for connection to said key card connector; and

Claims Text - CLTX:

a **sub-card** having a connector for detachable connection to said key card connector when said **sub-card** is inserted inside said **housing** through the opening and including an IC providing a function in addition to the functions of said IC of said main body.

Claims Text - CLTX:

13. The IC card and **sub-card** as claimed in claim 1 comprising falling-out preventing means in said **sub-card** and said main body for mechanically engaging each other to prevent said **sub-card** from falling out of said **housing**.

CLIPPEDIMAGE= JP411214093A

PAT-NO: JP411214093A

DOCUMENT-IDENTIFIER: JP 11214093 A

TITLE: CARD EDGE CONNECTOR ASSEMBLY

PUBN-DATE: August 6, 1999

INVENTOR-INFORMATION:

NAME	COUNTRY
KOBAYASHI, KATSUHIKO	N/A
ENOMOTO, IKUO	N/A

ASSIGNEE-INFORMATION:

NAME	COUNTRY
AMP JAPAN LTD	N/A

APPL-NO: JP10032157

APPL-DATE: January 29, 1998

INT-CL (IPC): H01R023/68

ABSTRACT:

PROBLEM TO BE SOLVED: To provide a card edge connector assembly having improved transmission characteristic, and mounting two card edge connectors on a motherboard by shortening the circuit length of the conductor pattern of the motherboard to bring the same pole number contacts into conduction.

SOLUTION: A card edge **connector** assembly 1 comprises first **connector** 10 and second **connector** 20 respectively providing insulating **housings** 11, 21 accepting **sub-boards** formed of plural conductor patterns on front and back faces. The first **connector** 10 and the second **connector** 20 are mounted on the motherboard 40 so that the back faces 18, 28 of the **housing** 11, 21 on opposite side to the **sub-board** accepting faces 17, 18 of the **housings** 11, 21 face opposite mutually. The contacts 13, 14 of the first **connector** 10 and the contacts 23, 24 of the second **connector** 20 are arranged so that the mutual same pole number are ranged.

CLIPPEDIMAGE= JP411214093A

PAT-NO: JP411214093A

DOCUMENT-IDENTIFIER: JP 11214093 A

TITLE: CARD EDGE CONNECTOR ASSEMBLY

PUBN-DATE: August 6, 1999

INVENTOR-INFORMATION:

NAME	COUNTRY
KOBAYASHI, KATSUHIKO	N/A
ENOMOTO, IKUO	N/A

ASSIGNEE-INFORMATION:

NAME	COUNTRY
AMP JAPAN LTD	N/A

APPL-NO: JP10032157

APPL-DATE: January 29, 1998

INT-CL (IPC): H01R023/68

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SOLUTION: A card edge **connector** assembly 1 comprises first **connector** 10 and second **connector** 20 respectively providing insulating **housings** 11, 21 accepting **sub-boards** formed of plural conductor patterns on front and back faces. The first **connector** 10 and the second **connector** 20 are mounted on the motherboard 40 so that the back faces 18, 28 of the **housing** 11, 21 on opposite side to the **sub-board** accepting faces 17, 18 of the **housings** 11, 21 face opposite mutually. The contacts 13, 14 of the first **connector** 10 and the contacts 23, 24 of the second **connector** 20 are arranged so that the mutual same pole number are ranged.

CLIPPEDIMAGE= JP411040964A

PAT-NO: JP411040964A

DOCUMENT-IDENTIFIER: JP 11040964 A

TITLE: STRUCTURE OF CHASSIS FOR MOUNTING OF SUB-BOARD

PUBN-DATE: February 12, 1999

INVENTOR-INFORMATION:
NAME
WATABE, SHINJI
MACHI, SHIGERU
YOSHIDA, SEIICHI

ASSIGNEE-INFORMATION:

NAME	COUNTRY
TOYO COMMUN EQUIP CO LTD	N/A

APPL-NO: JP09212654

APPL-DATE: July 23, 1997

INT-CL (IPC): H05K007/14

ABSTRACT:

PROBLEM TO BE SOLVED: To provide a chassis on which a sub-board is mounted, where a space in a device enclosure is utilized effectively, even when a maximum mount width of the sub-board is extended.

SOLUTION: A guide rail 2 is fitted to an upper side of a chassis 1, a guide groove 3 and a side rail 4 for a **sub-board** formed integrally with the chassis 1 are placed to left and right ridges of the chassis 1 by bending. The **sub-board** 6 is supported by inserting the **sub-board** 6 between a guide groove 7 of the guide rail 2 and the guide groove 3 and is connected to a main printed circuit board at the depth of an **enclosure** via by means of a **connector**. A maximum effective mount width h' of the **sub-board** is extended markedly than that of a conventional structure by configuring the chassis 1 in this way.

CLIPPEDIMAGE= JP411040964A

PAT-NO: JP411040964A

DOCUMENT-IDENTIFIER: JP 11040964 A

TITLE: STRUCTURE OF CHASSIS FOR MOUNTING OF SUB-BOARD

PUBN-DATE: February 12, 1999

INVENTOR-INFORMATION:
NAME
WATABE, SHINJI
MACHI, SHIGERU
YOSHIDA, SEIICHI

ASSIGNEE-INFORMATION:

NAME	COUNTRY
TOYO COMMUN EQUIP CO LTD	N/A

APPL-NO: JP09212654

APPL-DATE: July 23, 1997

INT-CL (IPC): H05K007/14

ABSTRACT:

PROBLEM TO BE SOLVED: To provide a chassis on which a sub-board is mounted, where a space in a device enclosure is utilized effectively, even when a maximum mount width of the sub-board is extended.

SOLUTION: A guide rail 2 is fitted to an upper side of a chassis 1, a guide groove 3 and a side rail 4 for a **sub-board** formed integrally with the chassis 1 are placed to left and right ridges of the chassis 1 by bending. The **sub-board** 6 is supported by inserting the **sub-board** 6 between a guide groove 7 of the guide rail 2 and the guide groove 3 and is connected to a main printed circuit board at the depth of an **enclosure** via by means of a **connector**. A maximum effective mount width h' of the **sub-board** is extended markedly than that of a conventional structure by configuring the chassis 1 in this way.

CLIPPEDIMAGE= JP408273747A

PAT-NO: JP408273747A

DOCUMENT-IDENTIFIER: JP 08273747 A

TITLE: EDGE CONNECTOR

PUBN-DATE: October 18, 1996

INVENTOR-INFORMATION:
NAME
ENOMOTO, IKUO

ASSIGNEE-INFORMATION:
NAME COUNTRY
AMP JAPAN LTD N/A

APPL-NO: JP07076482

APPL-DATE: March 31, 1995

INT-CL (IPC): H01R013/62;H01R023/00 ;H01R023/68

ABSTRACT:

PURPOSE: To reduce the warp of a board by holding the back end portion of a sub-board inserted into an edge connector.

CONSTITUTION: Plural terminals 26 are arranged in the **sub-board** accepting slot 22a of an edge **connector** 10 having U-shaped first **housing** 20. U-shaped second **housing** 40 is fixed to the first **housing** 20 by latch engaging or the like, and a holding member 80 engaging with a **sub-board** 60 is provided in second base portion 42 on the opposite side to the terminals 26. The **sub-board** 60 is supported by the edge **connector** 10 and the second base portion 42 is simultaneously supported by the holding member 80. Thereby, the warp of the **sub-board** 60 is prevented.

CLIPPEDIMAGE= JP408273747A

PAT-NO: JP408273747A

DOCUMENT-IDENTIFIER: JP 08273747 A

TITLE: EDGE CONNECTOR

PUBN-DATE: October 18, 1996

INVENTOR-INFORMATION:
NAME
ENOMOTO, IKUO

ASSIGNEE-INFORMATION:
NAME | COUNTRY
AMP JAPAN LTD | N/A

APPL-NO: JP07076482

APPL-DATE: March 31, 1995

INT-CL (IPC): H01R013/62;H01R023/00 ;H01R023/68

ABSTRACT:

PURPOSE: To reduce the warp of a board by holding the back end portion of a sub-board inserted into an edge connector.

CONSTITUTION: Plural terminals 26 are arranged in the **sub-board** accepting slot 22a of an edge **connector** 10 having U-shaped first **housing** 20. U-shaped second **housing** 40 is fixed to the first **housing** 20 by latch engaging or the like, and a holding member 80 engaging with a **sub-board** 60 is provided in second base portion 42 on the opposite side to the terminals 26. The **sub-board** 60 is supported by the edge **connector** 10 and the second base portion 42 is simultaneously supported by the holding member 80. Thereby, the warp of the **sub-board** 60 is prevented.

DERWENT-ACC-NO: 1998-048851
DERWENT-WEEK: 199843

TITLE: Edge **connector for sub-boards** such as memory module with electrically conductive pads - has **housing** in which stopper is provided for blocking movement of clamp member when it crosses release position

INVENTOR: MOCHIZUKI, S

PATENT-ASSIGNEE: KEL KK[KELKN]

PRIORITY-DATA: 1996JP-0109560 (April 30, 1996)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 5803761 A	September 8, 1998	N/A	000	H01R 013/62
JP 09298074 A	November 18, 1997	N/A	009	H01R 013/639

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
US 5803761A	N/A	1997US-0847312	April 24, 1997
JP09298074A	N/A	1996JP-0109560	April 30, 1996

INT-CL (IPC): H01R013/62; H01R013/639 ; H01R023/00 ; H01R023/68

ABSTRACTED-PUB-NO: JP09298074A
BASIC-ABSTRACT: The connector includes a housing (2) that has a main body part. An acceptance space that receives front end part of the substrate and an arm part which prolongs along right/left side of the main body part are made up of resin material. A set of contacts (3,4) are arranged in a line in the acceptance space, which contacts with electrically conductive pad that is formed on front end part of the substrate. A lock unit (5) provided in the arm part maintains the substrate. The lock unit is made up of a metallic material and is attached in the housing.

A clamp member (54) made up of resin material is movably arranged between clamping position and clamp release position by which substrate is clamped or released, respectively. A release lever (25) moves the clamp member to clamp release position. A stopper (27) is provided in the housing that blocks movement of clamp member when it crosses the release position.

ADVANTAGE - Improves operability of connector. Improves endurance of connector.

ABSTRACTED-PUB-NO: US 5803761A
EQUIVALENT-ABSTRACTS: The connector includes a housing (2) that has a main body part. An acceptance space that receives front end part of the substrate and an arm part which prolongs along right/left side of the main body part are made up of resin material. A set of contacts (3,4) are arranged in a line in the acceptance space, which contacts with electrically conductive pad that is formed on front end part of the substrate. A lock unit (5) provided in the arm part maintains the substrate. The lock unit is made up of a metallic material and is attached in the housing.

A clamp member (54) made up of resin material is movably arranged between clamping position and clamp release position by which substrate is clamped or released, respectively. A release lever (25) moves the clamp member to clamp release position. A stopper (27) is provided in the housing that blocks

movement of clamp member when it crosses the release position.

ADVANTAGE - Improves operability of connector. Improves endurance of connector.

CHOSEN-DRAWING: Dwg.1/8

TITLE-TERMS:
EDGE CONNECT SUB BOARD MEMORY MODULE ELECTRIC CONDUCTING PAD HOUSING STOPPER BLOCK MOVEMENT CLAMP MEMBER CROSS RELEASE POSITION

DERWENT-CLASS: V04

EPI-CODES: V04-D04; V04-G02; V04-M05;

SECONDARY-ACC-NO:
Non-CPI Secondary Accession Numbers: N1998-039122

L Number	Hits	Search Text	DB	Time stamp
1	1805	(sub-board$1) or subboard$1 or (daughter adj board$1)	USPAT; US-PGPUB	2002/11/04 10:34
4	470	(housing$1 or enclosure$1) same ((sub-board$1) or subboard$1 or (daughter adj board$1))	USPAT; US-PGPUB	2002/11/04 10:50
7	395	connector$1 same ((housing$1 or enclosure$1) same ((sub-board$1) or subboard$1 or (daughter adj board$1)))	USPAT; US-PGPUB	2002/11/04 10:50
10	144	(sub-board$1) or subboard$1	USPAT; US-PGPUB	2002/11/04 10:50
13	17	((sub-board$1) or subboard$1) same (connector$1 same ((housing$1 or enclosure$1) same ((sub-board$1) or subboard$1 or (daughter adj board$1))))	USPAT; US-PGPUB	2002/11/04 10:46
16	13	sub-card$1 or subcard$1	USPAT; US-PGPUB	2002/11/04 10:46
19	0	(sub-card$1 or subcard$1) same (connector$1 same ((housing$1 or enclosure$1) same ((sub-board$1) or subboard$1 or (daughter adj board$1))))	USPAT; US-PGPUB	2002/11/04 10:46
22	1	(housing$1 or enclosure$1) same (sub-card$1 or subcard$1)	USPAT; US-PGPUB	2002/11/04 10:47
25	392	(sub-board$1) or subboard$1 or sub-card$1 or subcard$1	EPO; JPO; DERWENT; IBM_TDB	2002/11/04 10:50
30	19	(housing$1 or enclosure$1) same ((sub-board$1) or subboard$1 or sub-card$1 or subcard$1)	EPO; JPO; DERWENT; IBM_TDB	2002/11/04 10:50
35	7	connector$1 same ((housing$1 or enclosure$1) same ((sub-board$1) or subboard$1 or sub-card$1 or subcard$1))	EPO; JPO; DERWENT; IBM_TDB	2002/11/04 10:51

US-PAT-NO: **5337220**
DOCUMENT-IDENTIFIER: US 5337220 A

TITLE: Electronic card and connector assembly for use therewith

DATE-ISSUED: August 9, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Granitz; Richard F.	Harrisburg	PA	N/A	N/A

US-CL-CURRENT: 361/816; 174/35R ; 361/684 ; 439/326

ABSTRACT:

An electronic card (10) has a housing (12) containing integrated circuitry. On a surface (14) of the card are contact pads (26, 28) connected to the internal circuitry. The contact pads are covered by a movable shield (32). An electrical connector assembly (50) mounted on a printed circuit board (52) includes a base member (56) having contact members (62, 64) in contact with contact pads (54) on the printed circuit board. The connector assembly further includes a hollow casing (66) pivotably mounted on the base member (56). The electronic card (10) is inserted within the casing (66), which is arranged to move the shield (32) so as to expose the contact pads (26, 28) of the card (10). The casing (66) holding the card (10) is then pivoted so that the contact pads (26, 28) of the card (10) engage the contact members (62, 68). A latch member (112) is provided for maintaining the contact pads in engagement with the contact members.

12 Claims, 8 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 5

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US PATENT NO. - PN:

5337220